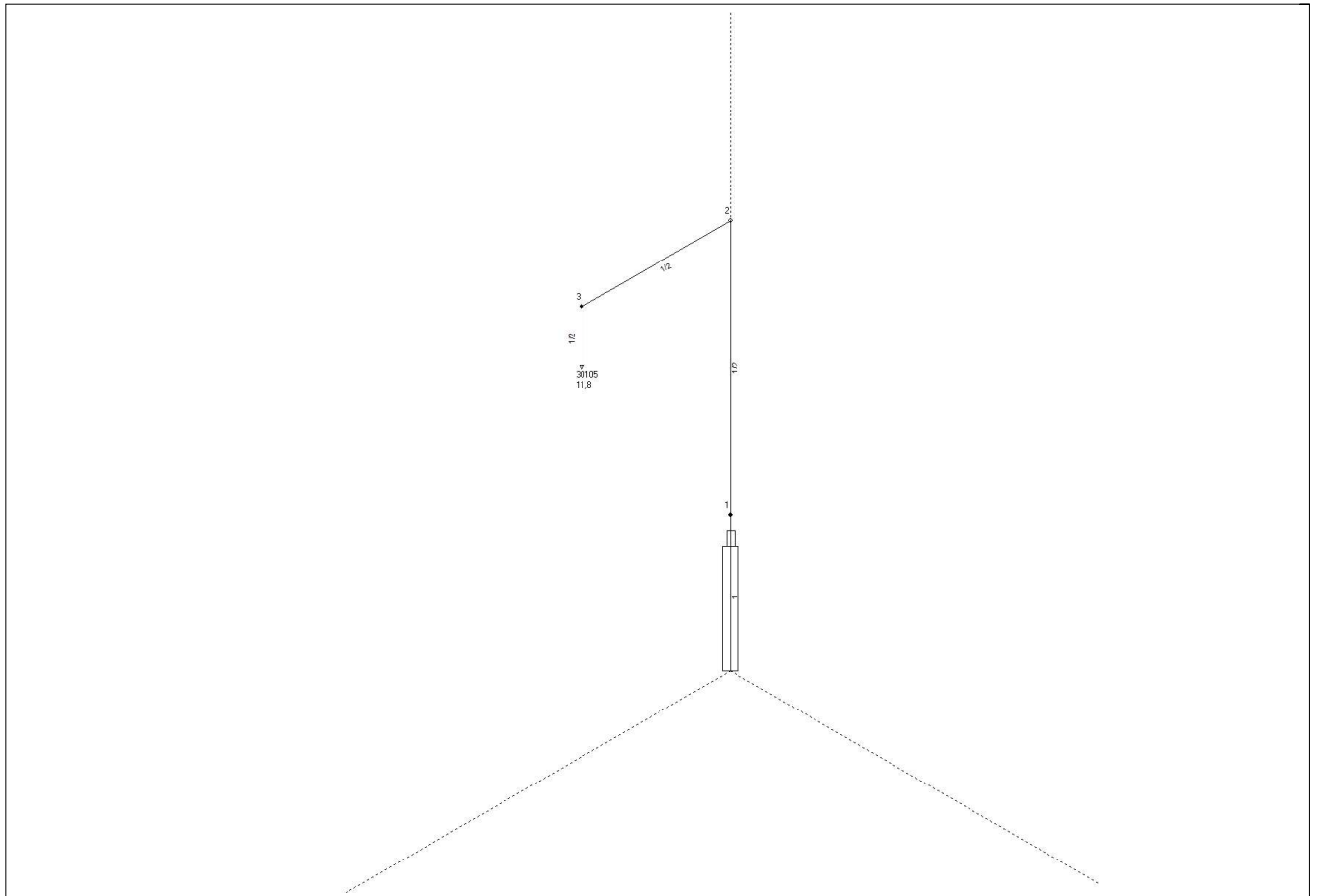




Project:	PR-3002
Project-No:	3002
Building:	Samodzielny Publiczny Zakład opieki Zdrowotnej MSWiA w Poznaniu
Object:	Pom. techniczne UPS przy serwerowni głównej p. 0
Contractor:	
Owner:	
Project engineer:	MK
Date:	2023-09-07
Altitude above sealevel:	100 m
Regulation rule for calculation of FK-5-1-12 quantities:	ISO 14520-1, Edition 2000
Pipe catalogue:	Rury Logistal.rkl
Component catalogue:	Savi Technologie.arm
Nozzle catalogue:	Savi Technologie.noz





### Pipesystem data:

Section-No:	Starting-node	Endnode	Length [m]	Height [m]	Pipetype	Diameter [mm] **	Fitting *	Component code	Component coefficient	Nb of containers FK-5-1-12 quantity
1	0	1	1,450	1,450	10	28,0	C	250	4,000	1,0
2	1	2	2,750	2,750	31	16,1		-	-	0,0
3	2	3	1,600	0,000	31	16,1	B	-	-	0,0
4	3	30105	0,050	-0,050	31	16,1	E	-	-	0,0

\* C=Component, B=Bend, T=T-Piece, E=Elbow

\*\* If a pipe diameter is equal zero see the extra table of the calculated diameters

### Legend of pipetypes

Type	Pipeclass	Pipe roughness
10	Rury Savi	smooth
31	Logistal 2020	galvanized

### Legend of components

Code	Type	Resistance coefficient
250	Zawor HFC Savi	4,000

### Nozzle data:

No.	Calculation zone	Diameter [mm]
30105	Główna	11,8

### Legend of nozzles:

Type	Number of orifices	C1	C2	C3	C4	C5	C6
3 Dysza FK-5-1-12 1/2"	1	0,04976	0,25599	0,00000	0,00000	0,00000	0,00000



#### Calculation zone data:

#### Calculation of design quantity:

Zone	Total volume [m3]	Volume of building parts [m3]	Calculated volume [m3]	Max. Over-pressure [mbar]	Design temp. [°C]	Extinguish-conc. [% Vol]	Design factor	Design conc. [% Vol]	Design quantity [kg]
1 Główna	32,8	0,0	32,8	2,000	20,0	4,3	1,30	5,6	27,05

Regulation rule for calculation of FK-5-1-12 quantities: ISO 14520-1, Edition 2000  
Altitude above sealevel: 100,0 m

#### FK-5-1-12 storage input data:

Container volume: 27,0 l  
Filling ratio: 1,100 kg/l  
Filling pressure: 42,0 bar abs  
Storage temperature: 20,0 °C  
Supplement factor: 1,00  
Minimum storage quantity: 27,05 kg  
Number of containers: 1

**Discharge time (input value):** 8,7 s

#### Further information:

Design with included gas discharge time  
Design with predetermined orifice diameters



## Calculation results:

### FK-5-1-12 storage data:

Design quantity:	27,0 kg
Supplement factor:	1,00
Minimum storage quantity:	27,0 kg
Container volume:	27,0 l
Filling ratio:	1,00 kg/l
Filling pressure:	42,0 bar abs
FK-5-1-12 -mass per container:	27,0 kg
Number of containers:	1
Actual storage quantity:	27,0 kg
Storage temperature:	20,0 °C
Starting container pressure:	42,0 bar abs

### Discharge time:

Discharge time air:	0,0 s
Total gas discharge time:	0,0 s
Two-phase discharge time:	8,7 s
Total discharge time:	8,7 s

### System information:

Container working pressure:	22,2 bar abs
Container working temperature:	20,0 °C
Total network volume:	0,8 l
Medium pipe content:	1,1 kg FK-5-1-12
Filling portion in pipe system:	0,04 kg FK-5-1-12 /kg FK-5-1-12 -storage

**Pipe system:**

Section-No:	Starting-node	Endnode	Pressure [bar abs]	Flowrate [kg/s]	Pipedimension Di [mm]	DN
1	0	1	21,64	2,94	28,0	1
2	1	2	17,46	2,94	16,1	1/2
3	2	3	14,95	2,94	16,1	1/2
4	3	30105	12,48	2,94	16,1	1/2



**Nozzle data:**

Calculation- zone no:	Nozzle no.	Nozzle type	Number of orifices	Pipeconnection Di [mm]	DN	Orifice [mm]	FK-5-1-12 out- put [kg]
1	30105	3	1	16,1	1/2	11,8	27,1

Two-phase discharge time: 8,7 s

Calculation- zone no:	Nozzle no.	Outlet velocity [m/s]	Transport time [s]	Jetdistance [m]	Evaporation distance [m]
1	30105	31,0	0,83	7,19	3,60



**Concentrations:**

Calculation- zone no:	O2	Gascomposition after discharge [%]	
		FK-5-1-12	N2
1	19,7	5,5	73,8

**Pressure relief opening:**

Calculation- zone no:	Recommended area against overpressure		Max. flow [kg/s]
	Area [m.]	Overpressure [mbar]	
1	0,021	2,0	2,9



### Component list:

Component	Number	Code	Coefficient
Zawor HFC Savi	1	250	4,000

Nozzle-type	Number	C1	C2	C3	C4	C5	C6
3	1	0,04970	0,25590	0,00000	0,00000	0,00000	0,00000

Pipe-type	Di [mm]	DN	Length [m]
10	28,00	1	1,400
31	16,10	1/2	4,500

### Number of bends (+) and elbows (-)

Bend-type	Di [mm]	DN	Number
90	16,10	1/2	1
-90	16,10	1/2	1

### Number of T-distributors (in- and outdiameter)

Number	Input	90-out	90-out	0-out
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